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LOCUS       NP_002065                340 aa            linear   PRI 21-DEC-2003
DEFINITION  guanine nucleotide-binding protein, beta-1 subunit; G protein,
            beta-1 subunit; transducin beta chain 1; guanine nucleotide-binding
            protein G(I)/G(S)/G(T) beta subunit 1; beta subunit,
            signal-transducing proteins GS/GI [Homo sapiens].
ACCESSION   NP_002065
VERSION     NP_002065.1  GI:11321585
DBSOURCE    REFSEQ: accession NM_002074.2
KEYWORDS    .
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (residues 1 to 340)
  AUTHORS   Li,Z., Hannigan,M., Mo,Z., Liu,B., Lu,W., Wu,Y., Smrcka,A.V.,
            Wu,G., Li,L., Liu,M., Huang,C.K. and Wu,D.
  TITLE     Directional sensing requires G beta gamma-mediated PAK1 and PIX
            alpha-dependent activation of Cdc42
  JOURNAL   Cell 114 (2), 215-227 (2003)
   PUBMED   12887923
  REMARK    GeneRIF: Directional sensing requires GNB1-mediated PAK1 and PIX
            alpha-dependent activation of Cdc42.
REFERENCE   2  (residues 1 to 340)
  AUTHORS   Sprague,R.S., Bowles,E.A., Olearczyk,J.J., Stephenson,A.H. and
            Lonigro,A.J.
  TITLE     The role of G protein beta subunits in the release of ATP from
            human erythrocytes
  JOURNAL   J. Physiol. Pharmacol. 53 (4 Pt 1), 667-674 (2002)
   PUBMED   12512701
REFERENCE   3  (residues 1 to 340)
  AUTHORS   Hurowitz,E.H., Melnyk,J.M., Chen,Y.J., Kouros-Mehr,H., Simon,M.I.
            and Shizuya,H.
  TITLE     Genomic characterization of the human heterotrimeric G protein
            alpha, beta, and gamma subunit genes
  JOURNAL   DNA Res. 7 (2), 111-120 (2000)
   PUBMED   10819326
REFERENCE   4  (residues 1 to 340)
  AUTHORS   Downes,G.B. and Gautam,N.
  TITLE     The G protein subunit gene families
  JOURNAL   Genomics 62 (3), 544-552 (1999)
   PUBMED   10644457
REFERENCE   5  (residues 1 to 340)
  AUTHORS   Mattingly,R.R. and Macara,I.G.
  TITLE     Phosphorylation-dependent activation of the Ras-GRF/CDC25Mm
            exchange factor by muscarinic receptors and G-protein beta gamma
            subunits
  JOURNAL   Nature 382 (6588), 268-272 (1996)
   PUBMED   8717044
REFERENCE   6  (residues 1 to 340)
  AUTHORS   Sondek,J., Bohm,A., Lambright,D.G., Hamm,H.E. and Sigler,P.B.
  TITLE     Crystal structure of a G-protein beta gamma dimer at 2.1A
            resolution
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  JOURNAL   Nature 379 (6563), 369-374 (1996)
   PUBMED   8552196
  REMARK    Erratum:  Nature 379 (6568), 847 (1996)
REFERENCE   7  (residues 1 to 340)
  AUTHORS   Wall,M.A., Coleman,D.E., Lee,E., Iniguez-Lluhi,J.A., Posner,B.A.,
            Gilman,A.G. and Sprang,S.R.
  TITLE     The structure of the G protein heterotrimer Gi alpha 1 beta 1 gamma
            2
  JOURNAL   Cell 83 (6), 1047-1058 (1995)
   PUBMED   8521505
REFERENCE   8  (residues 1 to 340)
  AUTHORS   Levine,M.A., Modi,W.S. and O'Brien,S.J.
  TITLE     Chromosomal localization of the genes encoding two forms of the G
            protein beta polypeptide, beta 1 and beta 3, in man
  JOURNAL   Genomics 8 (2), 380-386 (1990)
   PUBMED   1979057
REFERENCE   9  (residues 1 to 340)
  AUTHORS   Codina,J., Stengel,D., Woo,S.L. and Birnbaumer,L.
  TITLE     Beta-subunits of the human liver Gs/Gi signal-transducing proteins
            and those of bovine retinal rod cell transducin are identical
  JOURNAL   FEBS Lett. 207 (2), 187-192 (1986)
   PUBMED   3095147
COMMENT     REVIEWED REFSEQ: This record has been curated by NCBI staff. The
            reference sequence was derived from BC004186.2 and BC008991.1.

            Summary: Heterotrimeric guanine nucleotide-binding proteins (G
            proteins), which integrate signals between receptors and effector
            proteins, are composed of an alpha, a beta, and a gamma subunit.
            These subunits are encoded by families of related genes. This gene
            encodes a beta subunit. Beta subunits are important regulators of
            alpha subunits, as well as of certain signal transduction receptors
            and effectors. This gene uses alternative polyadenylation signals.
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                     subunit 1; beta subunit, signal-transducing proteins
                     GS/GI"
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                     go_function: heterotrimeric G-protein GTPase, beta-subunit
                     [goid 0000264] [evidence TAS] [pmid 3095147];
                     go_function: signal transducer activity [goid 0004871]
                     [evidence IEA];
                     go_function: heterotrimeric G-protein GTPase activity
                     [goid 0003927] [evidence TAS];
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                     go_process: RAS protein signal transduction [goid 0007265]
                     [evidence TAS] [pmid 8717044];
                     go_process: signal transduction [goid 0007165] [evidence
                     TAS] [pmid 8717044]"
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                     /db_xref="LocusID:2782"
                     /db_xref="MIM:139380"
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      121 csiynlktre gnvrvsrela ghtgylsccr flddnqivts sgdttcalwd ietgqqtttf
      181 tghtgdvmsl slapdtrlfv sgacdasakl wdvregmcrq tftghesdin aicffpngna
      241 fatgsddatc rlfdlradqe lmtyshdnii cgitsvsfsk sgrlllagyd dfncnvwdal
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Aug 4 2004 12:36:34

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LOCUS       NP_005264                340 aa            linear   PRI 21-DEC-2003
DEFINITION  guanine nucleotide-binding protein, beta-2 subunit; G protein,
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            beta subunit 2; signal-transducing guanine nucleotide-binding
            regulatory protein beta subunit; transducin beta chain 2 [Homo
            sapiens].
ACCESSION   NP_005264
VERSION     NP_005264.2  GI:20357529
DBSOURCE    REFSEQ: accession NM_005273.2
KEYWORDS    .
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (residues 1 to 340)
  AUTHORS   Sprague,R.S., Bowles,E.A., Olearczyk,J.J., Stephenson,A.H. and
            Lonigro,A.J.
  TITLE     The role of G protein beta subunits in the release of ATP from
            human erythrocytes
  JOURNAL   J. Physiol. Pharmacol. 53 (4 Pt 1), 667-674 (2002)
   PUBMED   12512701
REFERENCE   2  (residues 1 to 340)
  AUTHORS   Downes,G.B. and Gautam,N.
  TITLE     The G protein subunit gene families
  JOURNAL   Genomics 62 (3), 544-552 (1999)
   PUBMED   10644457
REFERENCE   3  (residues 1 to 340)
  AUTHORS   Kleiderlein,J.J., Nisson,P.E., Jessee,J., Li,W.B., Becker,K.G.,
            Derby,M.L., Ross,C.A. and Margolis,R.L.
  TITLE     CCG repeats in cDNAs from human brain
  JOURNAL   Hum. Genet. 103 (6), 666-673 (1998)
   PUBMED   9921901
  REMARK    Erratum: Hum. Genet. 104 (1), 113 (1999)
REFERENCE   4  (residues 1 to 340)
  AUTHORS   Glockner,G., Scherer,S., Schattevoy,R., Boright,A., Weber,J.,
            Tsui,L.C. and Rosenthal,A.
  TITLE     Large-scale sequencing of two regions in human chromosome 7q22:
            analysis of 650 kb of genomic sequence around the EPO and CUTL1
            loci reveals 17 genes
  JOURNAL   Genome Res. 8 (10), 1060-1073 (1998)
   PUBMED   9799793
REFERENCE   5  (residues 1 to 340)
  AUTHORS   Blatt,C., Eversole-Cire,P., Cohn,V.H., Zollman,S., Fournier,R.E.,
            Mohandas,L.T., Nesbitt,M., Lugo,T., Jones,D.T., Reed,R.R. et al.
  TITLE     Chromosomal localization of genes encoding guanine
            nucleotide-binding protein subunits in mouse and human
  JOURNAL   Proc. Natl. Acad. Sci. U.S.A. 85 (20), 7642-7646 (1988)
   PUBMED   2902634
REFERENCE   6  (residues 1 to 340)
  AUTHORS   Gao,B., Gilman,A.G. and Robishaw,J.D.
  TITLE     A second form of the beta subunit of signal-transducing G proteins
  JOURNAL   Proc. Natl. Acad. Sci. U.S.A. 84 (17), 6122-6125 (1987)
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   PUBMED   3114742
REFERENCE   7  (residues 1 to 340)
  AUTHORS   Fong,H.K., Amatruda,T.T. III, Birren,B.W. and Simon,M.I.
  TITLE     Distinct forms of the beta subunit of GTP-binding regulatory
            proteins identified by molecular cloning
  JOURNAL   Proc. Natl. Acad. Sci. U.S.A. 84 (11), 3792-3796 (1987)
   PUBMED   3108879
COMMENT     REVIEWED REFSEQ: This record has been curated by NCBI staff. The
            reference sequence was derived from BC012348.1.
            On Apr 30, 2002 this sequence version replaced gi:4885283.

            Summary: Heterotrimeric guanine nucleotide-binding proteins (G
            proteins), which integrate signals between receptors and effector
            proteins, are composed of an alpha, a beta, and a gamma subunit.
            These subunits are encoded by families of related genes. This gene
            encodes a beta subunit. Beta subunits are important regulators of
            alpha subunits, as well as of certain signal transduction receptors
            and effectors. This gene contains a trinucleotide (CCG) repeat
            length polymorphism in its 5' UTR.
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                     /note="G protein, beta-2 subunit; guanine
                     nucleotide-binding protein G(I)/G(S)/G(T) beta subunit 2;
                     signal-transducing guanine nucleotide-binding regulatory
                     protein beta subunit; transducin beta chain 2"
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                     go_component: heterotrimeric G-protein complex [goid
                     0005834] [evidence IEA];
                     go_function: heterotrimeric G-protein GTPase, beta-subunit
                     [goid 0000264] [evidence TAS] [pmid 2902634];
                     go_function: signal transducer activity [goid 0004871]
                     [evidence IEA];
                     go_function: heterotrimeric G-protein GTPase activity
                     [goid 0003927] [evidence TAS];
                     go_process: G-protein coupled receptor protein signaling
                     pathway [goid 0007186] [evidence TAS] [pmid 7649993];
                     go_process: signal transduction [goid 0007165] [evidence
                     IEA]"
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                     /db_xref="LocusID:2783"
                     /db_xref="MIM:139390"
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      121 csiyslktre gnvrvsrelp ghtgylsccr flddnqiits sgdttcalwd ietgqqtvgf
      181 aghsgdvmsl slapdgrtfv sgacdasikl wdvrdsmcrq tfighesdin avaffpngya
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Aug 4 2004 12:36:34

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LOCUS       NP_002066                 340 aa            linear   PRI 23-AUG-2004
DEFINITION  guanine nucleotide-binding protein, beta-3 subunit; guanine
            nucleotide-binding protein G(I)/G(S)/G(T) beta subunit 3;
            GTP-binding regulatory protein beta-3 chain; transducin beta chain
            3; G protein, beta-3 subunit [Homo sapiens].
ACCESSION   NP_002066
VERSION     NP_002066.1  GI:4504053
DBSOURCE    REFSEQ: accession NM_002075.2
KEYWORDS    .
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (residues 1 to 340)
  AUTHORS   Stefan,N., Stumvoll,M., Machicao,F., Koch,M., Haring,H.U. and
            Fritsche,A.
  TITLE     C825T polymorphism of the G protein beta3 subunit is associated
            with obesity but not with insulin sensitivity
  JOURNAL   Obes. Res. 12 (4), 679-683 (2004)
   PUBMED   15090636
  REMARK    GeneRIF: study concluded that the C825T polymorphism in the G
            protein beta3 subunit played an important role in the determination
            of obesity in a German population
REFERENCE   2  (residues 1 to 340)
  AUTHORS   Holtmann,G., Siffert,W., Haag,S., Mueller,N., Langkafel,M.,
            Senf,W., Zotz,R. and Talley,N.J.
  TITLE     G-protein beta 3 subunit 825 CC genotype is associated with
            unexplained (functional) dyspepsia
  JOURNAL   Gastroenterology 126 (4), 971-979 (2004)
   PUBMED   15057736
  REMARK    GeneRIF: Homozygous GNB3 825C carrier status is associated with
            unexplained predominantly upper abdominal symptoms.
REFERENCE   3  (residues 1 to 340)
  AUTHORS   Krippl,P., Langsenlehner,U., Renner,W., Yazdani-Biuki,B., Wolf,G.,
            Wascher,T.C., Paulweber,B. and Samonigg,H.
  TITLE     The 825C>T polymorphism of the G-protein beta-3 subunit gene (GNB3)
            and breast cancer
  JOURNAL   Cancer Lett. 206 (1), 59-62 (2004)
   PUBMED   15019160
  REMARK    GeneRIF: The 825C>T polymorphism of the G-protein beta-3 subunit
            gene is associated with the development of metastasis in low-grade
            breast cancer
REFERENCE   4  (residues 1 to 340)
  AUTHORS   Suwazono,Y., Okubo,Y., Kobayashi,E., Miura,K., Morikawa,Y.,
            Ishizaki,M., Kido,T., Nakagawa,H. and Nogawa,K.
  TITLE     Lack of association between human G-protein beta3 subunit variant
            and overweight in Japanese workers
  JOURNAL   Obes. Res. 12 (1), 4-8 (2004)
   PUBMED   14742836
  REMARK    GeneRIF: study indicated that the G-protein beta3 subunit gene
            (GNB3) C825T polymorphism is not a significant factor for
            overweight in Japanese people
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REFERENCE 5 (residues 1 to 340)
AUTHORS Joyce,P.R., Mulder,R.T., Luty,S.E., McKenzie,J.M., Miller,A.L., Rogers,G.R. and Kennedy,M.A.
TITLE Age-dependent antidepressant pharmacogenomics: polymorphisms of the serotonin transporter and G protein beta3 subunit as predictors of response to fluoxetine and nortriptyline
JOURNAL Int J Neuropsychopharmacol 6 (4), 339-346 (2003)
PUBMED 14604448
REMARK GeneRIF: Depressed patients under 25 T allele of G protein beta3 subunit associated with a markedly poorer response to nortriptyline, patients 25 yr or older, the G protein beta3 polymorphisms did not predict antidepressant response

REFERENCE 6 (residues 1 to 340)
AUTHORS Willeit,M., Praschak-Rieder,N., Zill,P., Neumeister,A., Ackenheil,M., Kasper,S. and Bondy,B.
TITLE C825T polymorphism in the G protein beta3-subunit gene is associated with seasonal affective disorder
JOURNAL Biol. Psychiatry 54 (7), 682-686 (2003)
PUBMED 14512207
REMARK GeneRIF: The G(beta)3 C825T polymorphism was associated with SAD in our study sample. This finding strengthens the evidence for the involvement of G protein-coupled signal transduction in the pathogenesis of affective disorder.

REFERENCE 7 (residues 1 to 340)
AUTHORS Nuckel,H., Frey,U., Aralh,N., Durig,J., Duhrsen,U. and Siffert,W.
TITLE The CC genotype of the C825T polymorphism of the G protein beta3 gene (GNB3) is associated with a high relapse rate in patients with chronic lymphocytic leukaemia
JOURNAL Leuk. Lymphoma 44 (10), 1739-1743 (2003)
PUBMED 14692527
REMARK GeneRIF: Polymorphism of the G protein beta3 gene is associated with a high relapse rate in patients with chronic lymphocytic leukaemia

REFERENCE 8 (residues 1 to 340)
AUTHORS Olszanecka,A., Kawecka-Jaszcz,K., Kuznetsova,T., Stolarz,K., Brand,E., Ryabikov,A., Herrmann,S.M., Nikitin,Y. and Staessen,J.A.
TITLE Ambulatory blood pressure and left ventricular structure and function in relation to the G-protein beta3-subunit polymorphism C825T in White Europeans
JOURNAL J Hum Hypertens 17 (5), 325-332 (2003)
PUBMED 12756405
REMARK GeneRIF: in TT homozygotes of both generations, early left ventricular relaxation was reduced. the observation might be because of the higher systolic pressure associated with the TT genotype.

REFERENCE 9 (residues 1 to 340)
AUTHORS Naber,C.K., Baumgart,D., Heusch,G., Siffert,W., Oldenburg,O., Huesing,J. and Erbel,R.
TITLE Role of the eNOS Glu298Asp variant on the GNB3825T allele dependent determination of alpha-adrenergic coronary constriction
JOURNAL Pharmacogenetics 13 (5), 279-284 (2003)
PUBMED 12724620
REMARK GeneRIF: The 825T allele of a polymorphism at GNB3 is associated with an enhanced coronary blood flow (CBF) and reduction in response to alpha(2).

REFERENCE 10 (residues 1 to 340)
AUTHORS Ruiz-Velasco,V. and Ikeda,S.R.
TITLE A splice variant of the G protein beta 3-subunit implicated in disease states does not modulate ion channels
JOURNAL Physiol. Genomics 13 (2), 85-95 (2003)
PUBMED 12595577
REMARK GeneRIF: When expressed in rat sympathetic neurons, human Gbeta3-s (an alternative splice variant of GNB3 with single-nucleotide

polymorphism C825T) appears to lack channel-modulating activity.
REFERENCE 11 (residues 1 to 340)
AUTHORS Rosskopf,D., Kielbik,M., Manthey,I., Bilmen,G., Eisenhardt,A. and Siffert,W.
TITLE Characterization of the splice variant Gbeta3v of the human G-protein Gbeta3 subunit
JOURNAL Biochim. Biophys. Acta 1626 (1-3), 33-42 (2003)
PUBMED 12697327
REMARK GeneRIF: Characterization of the splice variant Gbeta3v.
REFERENCE 12 (residues 1 to 340)
AUTHORS Rosskopf,D., Manthey,I., Habich,C., Kielbik,M., Eisenhardt,A., Nikula,C., Urban,M., Kohnen,S., Graf,E., Ravens,U. and Siffert,W.
TITLE Identification and characterization of G beta 3s2, a novel splice variant of the G-protein beta 3 subunit
JOURNAL Biochem. J. 371 (Pt 1), 223-232 (2003)
PUBMED 12431187
REMARK GeneRIF: these results suggest that G beta 3s2 is a biologically active G beta variant which may play a role in the manifestation of the complex phenotype associated with the 825T-allele.
REFERENCE 13 (residues 1 to 340)
AUTHORS Brand,E., Wang,J.G., Herrmann,S.M. and Staessen,J.A.
TITLE An epidemiological study of blood pressure and metabolic phenotypes in relation to the Gbeta3 C825T polymorphism
JOURNAL J. Hypertens. 21 (4), 729-737 (2003)
PUBMED 12658019
REMARK GeneRIF: higher blood pressure in TT homozygous men might arise via a metabolic pathway characterized by obesity and insulin resistance as well as via increased peripheral resistance secondary to higher haematocrit.
REFERENCE 14 (residues 1 to 340)
AUTHORS Saller,B., Nemesszeghy,P., Mann,K., Siffert,W. and Rosskopf,D.
TITLE Glucose and lipid metabolism in young lean normotensive males with the G protein beta3 825T-allele
JOURNAL Eur. J. Med. Res. 8 (3), 91-97 (2003)
PUBMED 12730030
REMARK GeneRIF: The TC-genotype is not associated with a primary defect in insulin secretion or sensitivity suggesting that obesity and hypertension in carriers of 825T do not likely result from primary alterations in glucose and insulin homeostasis
REFERENCE 15 (residues 1 to 340)
AUTHORS Frey,U.H., Aral,N., Muller,N. and Siffert,W.
TITLE Cooperative effect of GNB3 825C>T and GPIIIa PI(A) polymorphisms in enhanced platelet aggregation
JOURNAL Thromb. Res. 109 (5-6), 279-286 (2003)
PUBMED 12818251
REMARK GeneRIF: Low concentrations of agonists resulted in enhanced platelet aggregation in subjects with the GNB3 CC-genotype compared to carriers of a 825T-allele. Both genetic markers contribute synergistically to increased platelet aggregation.
REFERENCE 16 (residues 1 to 340)
AUTHORS Exton,M.S., Artz,M., Siffert,W. and Schedlowski,M.
TITLE G protein beta3 subunit 825T allele is associated with depression in young, healthy subjects
JOURNAL Neuroreport 14 (3), 531-533 (2003)
PUBMED 12634518
REMARK GeneRIF: G protein beta3 subunit 825T allele carriers displayed higher levels of depression. G protein beta3 subunit 825T allele is predictive of depressive mood in a young, healthy population.
REFERENCE 17 (residues 1 to 340)
AUTHORS Wascher,T.C., Paulweber,B., Malaimare,L., Stadlmayr,A., Iglseder,B., Schmoelzer,I. and Renner,W.
TITLE Associations of a human G protein beta3 subunit dimorphism with insulin resistance and carotid atherosclerosis

JOURNAL Stroke 34 (3), 605-609 (2003)
PUBMED 12624279
REMARK GeneRIF: The GNB3 825T allele is associated with reduced insulin sensitivity in men with abdominal-type fat distribution and with more advanced carotid atherosclerosis in middle-aged white men and women
REFERENCE 18 (residues 1 to 340)
AUTHORS von Beckerath,N., Schusterschitz,Y., Koch,W., Griesser,K., Mehilli,J., Gorchakova,O., Schomig,A. and Kastrati,A.
TITLE G protein beta 3 subunit 825T allele carriage and risk of coronary artery disease
JOURNAL Atherosclerosis 167 (1), 135-139 (2003)
PUBMED 12618278
REMARK GeneRIF: GNB3 825T polymorphism is associated with angiographically documented coronary artery disease.
REFERENCE 19 (residues 1 to 340)
AUTHORS Sperling,H., Eisenhardt,A., Virchow,S., Hauck,E., Lenk,S., Porst,H., Stief,C., Wetterauer,U., Rubben,H., Muller,N. and Siffert,W.
TITLE Sildenafil response is influenced by the G protein beta 3 subunit GNB3 C825T polymorphism: a pilot study
JOURNAL J. Urol. 169 (3), 1048-1051 (2003)
PUBMED 12576843
REMARK GeneRIF: association of the G protein beta 3 subunit (GNB3) C825T polymorphism, a determinant of intracellular signal transduction, with the drug response to sildenafil in patients with erectile dysfunction.
REFERENCE 20 (residues 1 to 340)
AUTHORS Shliakhto,E.V., Shwarts,E.I., Sokolova,L.A., Nefedova,Iu.B., Zhukova,A.V., Vinnik,T.A., Tolstova,I.A., Rudomanov,O.G. and Konradi,A.O.
TITLE Association of a polymorphic marker C825T of the beta(3) subunit of G-protein with myocardial hypertrophy in patients with hypertensive disease
JOURNAL Kardiologiia 43 (1), 44-46 (2003)
PUBMED 12891286
REMARK GeneRIF: GNB3 gene is associated with left ventricular hypertrophy in patients with hypertension.
REFERENCE 21 (residues 1 to 340)
AUTHORS Sprague,R.S., Bowles,E.A., Olearczyk,J.J., Stephenson,A.H. and Lonigro,A.J.
TITLE The role of G protein beta subunits in the release of ATP from human erythrocytes
JOURNAL J. Physiol. Pharmacol. 53 (4 Pt 1), 667-674 (2002)
PUBMED 12512701
REFERENCE 22 (residues 1 to 340)
AUTHORS Beige,J., Kreutz,R., Tscherkaschina,I., Scherer,S., Sharma,A.M., Zidek,W. and Offermann,G.
TITLE Matrix analysis for the dissection of interactions of G-protein beta3 subunit C825T genotype, allograft function, and posttransplant hypertension in kidney transplantation
JOURNAL Am. J. Kidney Dis. 40 (6), 1319-1324 (2002)
PUBMED 12460053
REMARK GeneRIF: In transplant recipients who did not lose their graft during the first 3 years after transplantation, the G3-TT genotype contributed to accelerated loss of allograft function by exaggeration of posttransplant hypertension.
REFERENCE 23 (residues 1 to 340)
AUTHORS Masuda,K., Osada,H., Iitsuka,Y., Seki,K. and Sekiya,S.
TITLE Positive association of maternal G protein beta3 subunit 825T allele with reduced head circumference at birth
JOURNAL Pediatr. Res. 52 (5), 687-691 (2002)
PUBMED 12409514

REMARK GeneRIF: There is a positive association of the maternal G protein beta3 subunit 825T allele with reduced head circumference at birth. Expression of this allele in the mother may exert influence on fetal metabolic environment.
REFERENCE 24 (residues 1 to 340)
AUTHORS Wenzel,R.R., Siffert,W., Bruck,H., Philipp,T. and Schafers,R.F.
TITLE Enhanced vasoconstriction to endothelin-1, angiotensin II and noradrenaline in carriers of the GNB3 825T allele in the skin microcirculation
JOURNAL Pharmacogenetics 12 (6), 489-495 (2002)
PUBMED 12172218
REMARK GeneRIF: The GNB3 C825T polymorphism is potentially an attractive pharmacogenetic marker to predict hormone-mediated responses in humans.
REFERENCE 25 (residues 1 to 340)
AUTHORS Dzida,G., Golon-Siekierska,P., Puzniak,A., Sobstyl,J., Bilan,A., Mosiewicz,J. and Hanzlik,J.
TITLE G-protein beta3 subunit gene C825T polymorphism is associated with arterial hypertension in Polish patients with type 2 diabetes mellitus
JOURNAL Med. Sci. Monit. 8 (8), CR597-CR602 (2002)
PUBMED 12165748
REMARK GeneRIF: Data show that the T825 variant of the G-protein beta3 subunit gene (GNB3) was not associated with type 2 diabetes itself, nor with overweight and obesity, but was associated with diabetic hypertension.
REFERENCE 26 (residues 1 to 340)
AUTHORS Poch,E., Giner,V., Gonzalez-Nunez,D., Coll,E., Oriola,J. and de la Sierra,A.
TITLE Association of the G protein beta3 subunit T allele with insulin resistance in essential hypertension
JOURNAL Clin. Exp. Hypertens. 24 (5), 345-353 (2002)
PUBMED 12109775
REMARK GeneRIF: relationship between the 825T allele of GNB3 and insulin resistance in the essential hypertensive patients studied, which seems to be independent of body mass index
REFERENCE 27 (residues 1 to 340)
AUTHORS Serretti,A., Lorenzi,C., Lilli,R., Mandelli,L., Pirovano,A. and Smeraldi,E.
TITLE Pharmacogenetics of lithium prophylaxis in mood disorders: analysis of COMT, MAO-A, and Gbeta3 variants
JOURNAL Am. J. Med. Genet. 114 (4), 370-379 (2002)
PUBMED 11992559
REMARK GeneRIF: possible association between the prophylactic efficacy of lithium in mood disorders and the following gene variants: catechol-O-methyltransferase (COMT) G158A, monoamine oxydase A (MAO-A) 30-bp repeat, G-protein beta 3-subunit (Gbeta3) C825T
REFERENCE 28 (residues 1 to 340)
AUTHORS Shlyakhto,E.V., Shwartz,E.I., Nefedova,Y.B., Zukova,A.V., Vinnic,T.A. and Konrady,A.O.
TITLE Lack of association of G-protein subunit gene C825T polymorphism with left ventricular hypertrophy in essential hypertension
JOURNAL Med. Sci. Monit. 8 (5), CR337-CR340 (2002)
PUBMED 12011775
REMARK GeneRIF: polymorphism in GNB3 does not have a role in left ventricular hypertrophy/hypertension
REFERENCE 29 (residues 1 to 340)
AUTHORS Tabara,Y., Kohara,K. and Miki,T.
TITLE Polymorphisms of genes encoding components of the sympathetic nervous system but not the renin-angiotensin system as risk factors for orthostatic hypotension
JOURNAL J. Hypertens. 20 (4), 651-656 (2002)
PUBMED 11910300

REMARK GeneRIF: Polymorphisms of genes encoding G-protein beta3 subunit as risk factors for orthostatic hypotension.
REFERENCE 30 (residues 1 to 340)
AUTHORS Bondy,B., Baghai,T.C., Zill,P., Bottlender,R., Jaeger,M., Minov,C., Schule,C., Zwanzger,P., Rupprecht,R. and Engel,R.R.
TITLE Combined action of the ACE D- and the G-protein beta3 T-allele in major depression: a possible link to cardiovascular disease?
JOURNAL Mol. Psychiatry 7 (10), 1120-1126 (2002)
PUBMED 12476328
REMARK GeneRIF: combined action of this protein and kininase ii in major depression; may have a link to cardiovascular disease
REFERENCE 31 (residues 1 to 340)
AUTHORS Obineche,E.N., Frossard,P.M. and Bokhari,A.M.
TITLE An association study of five genetic loci and left ventricular hypertrophy amongst Gulf Arabs
JOURNAL Hypertens. Res. 24 (6), 635-639 (2001)
PUBMED 11768721
REMARK GeneRIF: association between left ventricular hypertrophy and the C825T allele of the G-protein beta3 subunit gene in Arabs
REFERENCE 32 (residues 1 to 340)
AUTHORS Rosskopf,D., Busch,S., Manthey,I. and Siffert,W.
TITLE G protein beta 3 gene: structure, promoter, and additional polymorphisms
JOURNAL Hypertension 36 (1), 33-41 (2000)
PUBMED 10904009
REFERENCE 33 (residues 1 to 340)
AUTHORS Downes,G.B. and Gautam,N.
TITLE The G protein subunit gene families
JOURNAL Genomics 62 (3), 544-552 (1999)
PUBMED 10644457
REFERENCE 34 (residues 1 to 340)
AUTHORS Siffert,W., Rosskopf,D., Siffert,G., Busch,S., Moritz,A., Erbel,R., Sharma,A.M., Ritz,E., Wichmann,H.E., Jakobs,K.H. and Horsthemke,B.
TITLE Association of a human G-protein beta3 subunit variant with hypertension
JOURNAL Nat. Genet. 18 (1), 45-48 (1998)
PUBMED 9425898
REFERENCE 35 (residues 1 to 340)
AUTHORS Ansari-Lari,M.A., Shen,Y., Muzny,D.M., Lee,W. and Gibbs,R.A.
TITLE Large-scale sequencing in human chromosome 12p13: experimental and computational gene structure determination
JOURNAL Genome Res. 7 (3), 268-280 (1997)
PUBMED 9074930
REFERENCE 36 (residues 1 to 340)
AUTHORS Ansari-Lari,M.A., Muzny,D.M., Lu,J., Lu,F., Lilley,C.E., Spanos,S., Malley,T. and Gibbs,R.A.
TITLE A gene-rich cluster between the CD4 and triosephosphate isomerase genes at human chromosome 12p13
JOURNAL Genome Res. 6 (4), 314-326 (1996)
PUBMED 8723724
REFERENCE 37 (residues 1 to 340)
AUTHORS Levine,M.A., Smallwood,P.M., Moen,P.T. Jr., Helman,L.J. and Ahn,T.G.
TITLE Molecular cloning of beta 3 subunit, a third form of the G protein beta-subunit polypeptide
JOURNAL Proc. Natl. Acad. Sci. U.S.A. 87 (6), 2329-2333 (1990)
PUBMED 2107550
COMMENT REVIEWED REFSEQ: This record has been curated by NCBI staff. The reference sequence was derived from U47924.1.

Summary: Heterotrimeric guanine nucleotide-binding proteins (G proteins), which integrate signals between receptors and effector proteins, are composed of an alpha, a beta, and a gamma subunit.

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            These subunits are encoded by families of related genes. This gene
            encodes a beta subunit. Beta subunits are important regulators of
            alpha subunits, as well as of certain signal transduction receptors
            and effectors. A single-nucleotide polymorphism (C825T) in this
            gene is associated with essential hypertension and obesity. This
            polymorphism is also associated with the occurrence of the splice
            variant GNB3-s, which appears to have increased activity. GNB3-s is
            an example of alternative splicing caused by a nucleotide change
            outside of the splice donor and acceptor sites. Additional splice
            variants may exist for this gene, but they have not been fully
            described.
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                        /db_xref="taxon:9606"
                        /chromosome="12"
                        /map="12p13"
     Protein            1..340
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                        subunit"
                        /note="guanine nucleotide-binding protein G(I)/G(S)/G(T)
                        beta subunit 3; GTP-binding regulatory protein beta-3
                        chain; transducin beta chain 3; G protein, beta-3 subunit"
     CDS                1..340
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                        /coded_by="NM_002075.2:406..1428"
                        /note="go_component: heterotrimeric G-protein complex
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                        go_function: GTPase activity [goid 0003924] [evidence TAS]
                        [pmid 9425898];
                        go_function: signal transducer activity [goid 0004871]
                        [evidence IEA];
                        go_process: signal transduction [goid 0007165] [evidence
                        IEA];
                        go_process: regulation of blood pressure [goid 0008217]
                        [evidence TAS] [pmid 9425898];
                        go_process: G-protein coupled receptor protein signaling
                        pathway [goid 0007186] [evidence IEA];
                        go_process: G-protein coupled receptor protein signaling
                        pathway [goid 0007186] [evidence TAS] [pmid 2107550]"
                        /db_xref="GeneID:2784"
                        /db_xref="LocusID:2784"
                        /db_xref="MIM:139130"
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       61 mhwatdskll vsasqdgkli vwdsyttnkv haiplrsswv mtcayapsgn fvacggldnm
      121 csiynlksre gnvkvsrels ahtgylsccr flddnnivts sgdttcalwd ietgqqktvf
      181 vghtgdcmsl avspdfnlfi sgacdasakl wdvregtcrq tftghesdin aicffpngea
      241 ictgsddasc rlfdlradqe licfshesii cgitsvafsl sgrllfagyd dfncnvwdsm
      301 kservgilsg hdnrvsclgv tadgmavatg swdsflkiwn
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NCBI | NLM | NIH

Aug 4 2004 12:36:34

LOCUS NP_067642 340 aa linear PRI 21-DEC-2003
DEFINITION guanine nucleotide-binding protein, beta-4 subunit; guanine nucleotide binding protein beta subunit 4; G protein beta-4 subunit [Homo sapiens].
ACCESSION NP_067642
VERSION NP_067642.1 GI:11055998
DBSOURCE REFSEQ: accession NM_021629.2
KEYWORDS .
SOURCE Homo sapiens (human)
ORGANISM Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE 1 (residues 1 to 340)
AUTHORS Rosskopf,D., Nikula,C., Manthey,I., Joisten,M., Frey,U., Kohnen,S. and Siffert,W.
TITLE The human G protein beta4 subunit: gene structure, expression, Ggamma and effector interaction
JOURNAL FEBS Lett. 544 (1-3), 27-32 (2003)
PUBMED 12782285
REMARK GeneRIF: Gbeta4 is widely expressed, located on chromosome 3 with a genomic structure like Gbeta1 to Gbeta3, but different from Gbeta5
REFERENCE 2 (residues 1 to 340)
AUTHORS Huang,L., Max,M., Margolskee,R.F., Su,H., Masland,R.H. and Euler,T.
TITLE G protein subunit G gamma 13 is coexpressed with G alpha o, G beta 3, and G beta 4 in retinal ON bipolar cells
JOURNAL J. Comp. Neurol. 455 (1), 1-10 (2003)
PUBMED 12454992
REMARK GeneRIF: Gbeta4 subunit is coexpressed in physiologically ON-type cone bipolar cells with Ggamma13 and Gbeta3 but is not present in OFF-type bipolar cells.
REFERENCE 3 (residues 1 to 340)
AUTHORS Sprague,R.S., Bowles,E.A., Olearczyk,J.J., Stephenson,A.H. and Lonigro,A.J.
TITLE The role of G protein beta subunits in the release of ATP from human erythrocytes
JOURNAL J. Physiol. Pharmacol. 53 (4 Pt 1), 667-674 (2002)
PUBMED 12512701
REFERENCE 4 (residues 1 to 340)
AUTHORS Ruiz-Velasco,V., Ikeda,S.R. and Puhl,H.L.
TITLE Cloning, tissue distribution, and functional expression of the human G protein beta 4-subunit
JOURNAL Physiol. Genomics 8 (1), 41-50 (2002)
PUBMED 11842130
REFERENCE 5 (residues 1 to 340)
AUTHORS Downes,G.B. and Gautam,N.
TITLE The G protein subunit gene families
JOURNAL Genomics 62 (3), 544-552 (1999)
PUBMED 10644457
COMMENT REVIEWED REFSEQ: This record has been curated by NCBI staff. The reference sequence was derived from BC000873.1, AK001890.1 and AK022599.1.

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     Summary: Heterotrimeric guanine nucleotide-binding proteins (G
     proteins), which integrate signals between receptors and effector
     proteins, are composed of an alpha, a beta, and a gamma subunit.
     These subunits are encoded by families of related genes. This gene
     encodes a beta subunit. Beta subunits are important regulators of
     alpha subunits, as well as of certain signal transduction receptors
     and effectors.
FEATURES             Location/Qualifiers
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                     /db_xref="taxon:9606"
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                     /map="3q27.1"
     Protein         1..340
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                     /note="guanine nucleotide binding protein beta subunit 4;
                     G protein beta-4 subunit"
     Region          18..340
                     /region_name="G-protein beta subunit [General function
                     prediction only]"
                     /note="KOG0286"
                     /db_xref="CDD:18082"
     CDS             1..340
                     /gene="GNB4"
                     /coded_by="NM_021629.2:281..1303"
                     /note="go_component: heterotrimeric G-protein complex
                     [goid 0005834] [evidence IEA];
                     go_function: signal transducer activity [goid 0004871]
                     [evidence IEA];
                     go_function: heterotrimeric G-protein GTPase activity
                     [goid 0003927] [evidence IEA];
                     go_process: G-protein coupled receptor protein signaling
                     pathway [goid 0007186] [evidence IEA];
                     go_process: signal transduction [goid 0007165] [evidence
                     IEA]"
                     /db_xref="GeneID:59345"
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ORIGIN
        1 mseleqlrqe aeqlrnqiqd arkacndatl vqitsnmdsv griqmrtrrt lrghlakiya
       61 mhwgydsrll vsasqdgkli iwdsyttnkm haiplrsswv mtcayapsgn yvacggldni
      121 csiynlktre gnvrvsrelp ghtgylsccr flddsqivts sgdttcalwd ietaqqtttf
      181 tghsgdvmsl slspdmrtfv sgacdasskl wdirdgmcrq sftghvsdin avsffpngya
      241 fatgsddatc rlfdlradqe lllyshdnii cgitsvafsk sgrlllagyd dfncnvwdtl
      301 kgdragvlag hdnrvsclgv tddgmavatg swdsflriwn
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LOCUS       NP_006569                 353 aa            linear   PRI 21-DEC-2003
DEFINITION  guanine nucleotide-binding protein, beta-5 subunit isoform a G
            protein, beta-5 subunit; transducin beta chain 5; guanine
            nucleotide-binding protein, beta subunit 5L; G protein, beta
            subunit 5L [Homo sapiens].
ACCESSION   NP_006569
VERSION     NP_006569.1  GI:5729852
DBSOURCE    REFSEQ: accession NM_006578.2
KEYWORDS    .
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (residues 1 to 353)
  AUTHORS   Downes,G.B. and Gautam,N.
  TITLE     The G protein subunit gene families
  JOURNAL   Genomics 62 (3), 544-552 (1999)
   PUBMED   10644457
REFERENCE   2  (residues 1 to 353)
  AUTHORS   Jones,P.G., Lombardi,S.J. and Cockett,M.I.
  TITLE     Cloning and tissue distribution of the human G protein beta 5 cDNA
  JOURNAL   Biochim. Biophys. Acta 1402 (3), 288-291 (1998)
   PUBMED   9606987
COMMENT     REVIEWED REFSEQ: This record has been curated by NCBI staff. The
            reference sequence was derived from BC013997.2 and AF017656.1.

            Summary: Heterotrimeric guanine nucleotide-binding proteins (G
            proteins), which integrate signals between receptors and effector
            proteins, are composed of an alpha, a beta, and a gamma subunit.
            These subunits are encoded by families of related genes. This gene
            encodes a beta subunit. Beta subunits are important regulators of
            alpha subunits, as well as of certain signal transduction receptors
            and effectors. Alternatively spliced transcript variants encoding
            different isoforms exist.

            Transcript Variant: This variant (1) encodes the shorter isoform
            (a).
FEATURES             Location/Qualifiers
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                     /organism="Homo sapiens"
                     /db_xref="taxon:9606"
                     /chromosome="15"
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     Protein         1..353
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                     subunit isoform a"
                     /note="G protein, beta-5 subunit; transducin beta chain 5;
                     guanine nucleotide-binding protein, beta subunit 5L; G
                     protein, beta subunit 5L"
     Region          9..353
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                     prediction only]"
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      121 acggldnkcs vypltfdkne nmaakkksva mhtnylsacs ftnsdmqilt asgdgtcalw
      181 dvesgqllqs fhghgadvlc ldlapsetgn tfvsggcdkk amvwdmrsgq cvqafethes
      241 dinsvryyps gdafasgsdd atcrlydlra drevaiyske siifgassvd fslsgrllfa
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Aug 4 2004 12:36:34

LOCUS NP_057278 395 aa linear PRI 21-DEC-2003
DEFINITION guanine nucleotide-binding protein, beta-5 subunit isoform b; G protein, beta-5 subunit; transducin beta chain 5; guanine nucleotide-binding protein, beta subunit 5L; G protein, beta subunit 5L [Homo sapiens].
ACCESSION NP_057278
VERSION NP_057278.2 GI:20336270
DBSOURCE REFSEQ: accession NM_016194.2
KEYWORDS .
SOURCE Homo sapiens (human)
ORGANISM Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE 1 (residues 1 to 395)
AUTHORS Downes,G.B. and Gautam,N.
TITLE The G protein subunit gene families
JOURNAL Genomics 62 (3), 544-552 (1999)
PUBMED 10644457
REFERENCE 2 (residues 1 to 395)
AUTHORS Jones,P.G., Lombardi,S.J. and Cockett,M.I.
TITLE Cloning and tissue distribution of the human G protein beta 5 cDNA
JOURNAL Biochim. Biophys. Acta 1402 (3), 288-291 (1998)
PUBMED 9606987
COMMENT REVIEWED REFSEQ: This record has been curated by NCBI staff. The reference sequence was derived from AF300650.1, AW967075.1 and BC013997.2.
On Apr 28, 2002 this sequence version replaced gi:7705367.

Summary: Heterotrimeric guanine nucleotide-binding proteins (G proteins), which integrate signals between receptors and effector proteins, are composed of an alpha, a beta, and a gamma subunit. These subunits are encoded by families of related genes. This gene encodes a beta subunit. Beta subunits are important regulators of alpha subunits, as well as of certain signal transduction receptors and effectors. Alternatively spliced transcript variants encoding different isoforms exist.

Transcript Variant: This variant (2) has two additional exons at its 5' end, but lacks the 5' portion of its third exon, compared to variant 1. It encodes an isoform (b) containing 42 additional amino acids at its N terminus compared to isoform a. This isoform is also referred to as beta subunit 5L.

FEATURES Location/Qualifiers
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                /db_xref="CDD:18082"
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      121 vsssqdgkvi vwdsfttnke havtmpctwv macayapsgc aiacggldnk csvypltfdk
      181 nenmaakkks vamhtnylsa csftnsdmqi ltasgdgtca lwdvesgqll qsfhghgadv
      241 lcldlapset gntfvsggcd kkamvwdmrs gqcvqafeth esdinsvryy psgdafasgs
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Aug 4 2004 12:36:34

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LOCUS       P16520                    340 aa            linear   PRI 15-MAR-2004
DEFINITION  Guanine nucleotide-binding protein G(I)/G(S)/G(T) beta subunit 3
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ACCESSION   P16520
VERSION     P16520  GI:121011
DBSOURCE    swissprot: locus GBB3_HUMAN, accession P16520;
            class: standard.
            created: Aug 1, 1990.
            sequence updated: Aug 1, 1990.
            annotation updated: Mar 15, 2004.
            xrefs: gi: 183412, gi: 306776, gi: 1633547, gi: 1732410, gi:
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            1934891, gi: 1934892, gi: 1934893, gi: 1934894, gi: 1934895, gi:
            1934884, gi: 3954944, gi: 20257501, gi: 20257502, gi: 71873
            xrefs (non-sequence databases): HSSPP04901, GenewHGNC:4400, MIM
            139130, GO0003927, GO0007186, GO0008217, InterProIPR001632,
            InterProIPR001680, PfamPF00400, PRINTSPR00319, PRINTSPR00320,
            ProDomPD000018, SMARTSM00320, PROSITEPS00678, PROSITEPS50082,
            PROSITEPS50294
KEYWORDS    Transducer; Repeat; WD repeat; Multigene family; Polymorphism.
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (residues 1 to 340)
  AUTHORS   Levine,M.A., Smallwood,P.M., Moen,P.T. Jr., Helman,L.J. and
            Ahn,T.G.
  TITLE     Molecular cloning of beta 3 subunit, a third form of the G protein
            beta-subunit polypeptide
  JOURNAL   Proc. Natl. Acad. Sci. U.S.A. 87 (6), 2329-2333 (1990)
  MEDLINE   90192801
   PUBMED   2107550
  REMARK    SEQUENCE FROM N.A.
REFERENCE   2  (residues 1 to 340)
  AUTHORS   Ansari-Lari,M.A., Muzny,D.M., Lu,J., Lu,F., Lilley,C.E., Spanos,S.,
            Malley,T. and Gibbs,R.A.
  TITLE     A gene-rich cluster between the CD4 and triosephosphate isomerase
            genes at human chromosome 12p13
  JOURNAL   Genome Res. 6 (4), 314-326 (1996)
  MEDLINE   96303695
   PUBMED   8723724
  REMARK    SEQUENCE FROM N.A.
REFERENCE   3  (residues 1 to 340)
  AUTHORS   Busch,S., Dyhr,W. and Siffert,W.
  TITLE     Direct Submission
  JOURNAL   Submitted (~APR-1997)
  REMARK    SEQUENCE FROM N.A.
REFERENCE   4  (residues 1 to 340)
  AUTHORS   Puhl,H.L. III, Ikeda,S.R. and Aronstam,R.S.
  TITLE     Direct Submission
  JOURNAL   Submitted (~MAR-2002)
  REMARK    SEQUENCE FROM N.A.
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            TISSUE=Brain
COMMENT     ---------------------------------------------------------------------
            This SWISS-PROT entry is copyright. It is produced through a
            collaboration between the Swiss Institute of Bioinformatics and
            the EMBL outstation - the European Bioinformatics Institute.
            The original entry is available from http://www.expasy.ch/sprot
            and http://www.ebi.ac.uk/sprot
            ---------------------------------------------------------------------.
            [FUNCTION] Guanine nucleotide-binding proteins (G proteins) are
            involved as a modulator or transducer in various transmembrane
            signaling systems. The beta and gamma chains are required for the
            GTPase activity, for replacement of GDP by GTP, and for G
            protein-effector interaction.
            [SUBUNIT] G proteins are composed of 3 units, alpha, beta and
            gamma.
            [SIMILARITY] Contains 7 WD repeats.
FEATURES              Location/Qualifiers
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                      /db_xref="taxon:9606"
     gene             1..340
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                      G(I)/G(S)/G(T) beta subunit 3"
     Region           53..83
                      /gene="GNB3"
                      /region_name="Repetitive region"
                      /note="WD 1."
     Region           76
                      /gene="GNB3"
                      /region_name="Variant"
                      /note="D -> N (in dbSNP:2234756). /FTId=VAR_014756."
     Region           95..125
                      /gene="GNB3"
                      /region_name="Repetitive region"
                      /note="WD 2."
     Region           141..170
                      /gene="GNB3"
                      /region_name="Repetitive region"
                      /note="WD 3."
     Region           182..212
                      /gene="GNB3"
                      /region_name="Repetitive region"
                      /note="WD 4."
     Region           224..254
                      /gene="GNB3"
                      /region_name="Repetitive region"
                      /note="WD 5."
     Region           268..298
                      /gene="GNB3"
                      /region_name="Repetitive region"
                      /note="WD 6."
     Region           272
                      /gene="GNB3"
                      /region_name="Variant"
                      /note="G -> S (in dbSNP:5442). /FTId=VAR_014757."
     Region           310..340
                      /gene="GNB3"
                      /region_name="Repetitive region"
                      /note="WD 7."
     Region           339
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                     /gene="GNB3"
                     /region_name="Variant"
                     /note="W -> L (in dbSNP:5444). /FTId=VAR_014758."
ORIGIN
        1 mgemeqlrqe aeqlkkqiad arkacadvtl aelvsglevv grvqmrtrrt lrghlakiya
       61 mhwatdskll vsasqdgkli vwdsyttnkv haiplrsswv mtcayapsgn fvacggldnm
      121 csiynlksre gnvkvsrels ahtgylsccr flddnnivts sgdttcalwd ietgqqktvf
      181 vghtgdcmsl avspdfnlfi sgacdasakl wdvregtcrq tftghesdin aicffpngea
      241 ictgsddasc rlfdlradqe licfshesii cgitsvafsl sgrllfagyd dfncnvwdsm
      301 kservgilsg hdnrvsclgv tadgmavatg swdsflkiwn
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```
LOCUS       RGHUB3                    340 aa            linear   PRI 22-JUN-1999
DEFINITION  GTP-binding regulatory protein beta-3 chain - human.
ACCESSION   RGHUB3
VERSION     RGHUB3  GI:71873
DBSOURCE    pir: locus RGHUB3;

            summary: #length 340 #molecular-weight 37221 #checksum 5483
            ;
            genetic: #gene GDB:GNB3 ##cross-references GDB:120005; OMIM:139130
            #map_position 12p13-12p13
            ;
            superfamily: GTP-binding regulatory protein beta chain; WD repeat
            homology
            ;
            PIR dates: 31-Dec-1992 #sequence_revision 31-Dec-1992 #text_change
            22-Jun-1999
            .
KEYWORDS    GTP binding; heterotrimer; signal transduction.
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (residues 1 to 340)
  AUTHORS   Levine,M.A., Smallwood,P.M., Moen,P.T. Jr., Helman,L.J. and
            Ahn,T.G.
  TITLE     Molecular cloning of beta 3 subunit, a third form of the G protein
            beta-subunit polypeptide
  JOURNAL   Proc. Natl. Acad. Sci. U.S.A. 87 (6), 2329-2333 (1990)
  MEDLINE   90192801
   PUBMED   2107550
COMMENT     The G proteins are a family of guanine nucleotide-binding proteins
            that relay signals from cell surface receptors to intracellular
            effectors; they are composed of alpha, beta, and gamma chains. The
            beta and gamma chains, required for GTPase activity, appear to be
            common to all G proteins. The alpha chain contains the guanine
            nucleotide binding site and serves to activate phosphodiesterase;
            it is specific for each type of G protein.
            In mammals, four distinct types of beta chains have been found.
FEATURES             Location/Qualifiers
     source          1..340
                     /organism="Homo sapiens"
                     /db_xref="taxon:9606"
     Protein         1..340
                     /product="GTP-binding regulatory protein beta-3 chain"
                     /note="guanine nucleotide binding protein beta-3 chain;
                     heterotrimeric G-protein beta-3 chain; transducin beta-3
                     chain"
     Region          51..84
                     /region_name="domain"
                     /note="WD repeat homology #label WD1"
     Region          88..126
                     /region_name="domain"
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                /note="WD repeat homology #label WD2"
     Region     139..171
                /region_name="domain"
                /note="WD repeat homology #label WD3"
     Region     180..213
                /region_name="domain"
                /note="WD repeat homology #label WD4"
     Region     222..255
                /region_name="domain"
                /note="WD repeat homology #label WD5"
     Region     263..299
                /region_name="domain"
                /note="WD repeat homology #label WD6"
     Region     308..340
                /region_name="domain"
                /note="WD repeat homology #label WD7"
ORIGIN
        1 mgemeqlrqe aeqlkkqiad arkacadvtl aelvsglevv grvqmrtrrt lrghlakiya
       61 mhwatdskll vsasqdgkli vwdsyttnkv haiplrsswv mtcayapsgn fvacggldnm
      121 csiynlksre gnvkvsrels ahtgylsccr flddnnivts sgdttcalwd ietgqqktvf
      181 vghtgdcmsl avspdfnlfi sgacdasakl wdvregtcrq tftghesdin aicffpngea
      241 ictgsddasc rlfdlradqe licfshesii cgitsvafsl sgrllfagyd dfncnvwdsm
      301 kservgilsg hdnrvsclgv tadgmavatg swdsflkiwn
//
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Aug 4 2004 12:36:34

```
LOCUS       AAF04308                 230 aa            linear   PRI 27-OCT-1999
DEFINITION  G protein beta subunit [Homo sapiens].
ACCESSION   AAF04308
VERSION     AAF04308.1  GI:6120137
DBSOURCE    locus AF195883 accession AF195883.1
KEYWORDS    .
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (residues 1 to 230)
  AUTHORS   Ramachandiran,S., Lau,S.S. and Monks,T.J.
  TITLE     A novel G protein beta subunit (G beta 6) in human promyelocytic
            leukemia (HL-60) cells
  JOURNAL   Unpublished
REFERENCE   2  (residues 1 to 230)
  AUTHORS   Ramachandiran,S., Lau,S.S. and Monks,T.J.
  TITLE     Direct Submission
  JOURNAL   Submitted (18-OCT-1999) Pharmacology & Toxicology, The University
            of Texas at Austin, College of Pharmacy, Austin, TX 78712, USA
COMMENT     Method: conceptual translation supplied by author.
FEATURES             Location/Qualifiers
     source          1..230
                     /organism="Homo sapiens"
                     /db_xref="taxon:9606"
                     /cell_line="HL-60"
                     /cell_type="promyelocytic leukemia cells"
     Protein         <1..230
                     /product="G protein beta subunit"
                     /name="G beta 6; G beta-like protein; guanine nucleotide
                     binding protein"
     CDS             1..230
                     /coded_by="AF195883.1:<1..693"
ORIGIN
        1 grwmytgged ctariwdlrs rnlqcqrifq vnapincvcl hpnqaelivg dqsgaihiwd
       61 lktdhneqli pepevsitsa hidpdasyma avnstgncyv wnltggigde vtqlipktki
      121 pahtryalqc rfspdstlla tcsadqtcki wrtsnfslmt elsiksgnpg essrgwmwgc
      181 afsgdsqyiv tassdnlarl wcvetgeikr eygghqkavv clafndsvlg
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LOCUS       AAA52582                  340 aa            linear   PRI 08-NOV-1994
DEFINITION  guanine nucleotide binding protein beta-3 subunit.
ACCESSION   AAA52582
VERSION     AAA52582.1  GI:
DBSOURCE    locus HUMGNBPB3 accession M31328.1
KEYWORDS    .
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (residues 1 to 340)
  AUTHORS   Levine,M.A., Smallwood,P.M., Moen,P.T. Jr., Helman,L.J. and
            Ahn,T.G.
  TITLE     Molecular cloning of beta 3 subunit, a third form of the G protein
            beta-subunit polypeptide
  JOURNAL   Proc. Natl. Acad. Sci. U.S.A. 87 (6), 2329-2333 (1990)
  MEDLINE   90192801
   PUBMED   2107550
COMMENT     On Jul 26, 1993 this sequence version replaced gi:183413.
            Draft entry and computer-readable sequence for [1] kindly submitted
            by M.A.Levine, 17-JAN-1990, for release after publication.
            Method: conceptual translation.
FEATURES             Location/Qualifiers
     source          1..340
                     /organism="Homo sapiens"
                     /db_xref="taxon:9606"
                     /map="12p13"
     Protein         1..340
                     /name="guanine nucleotide binding protein beta-3 subunit"
     CDS             1..340
                     /gene="GNB3"
                     /coded_by="M31328.1:7..1029"
                     /db_xref="GDB:G00-120-005"
ORIGIN
        1 mgemeqlrqe aeqlkkqiad arkacadvtl aelvsglevv grvqmrtrrt lrghlakiya
       61 mhwatdskll vsasqdgkli vwdsyttnkv haiplrsswv mtcayapsgn fvacggldnm
      121 csiynlksre gnvkvsrels ahtgylsccr flddnnivts sgdttcalwd ietgqqktvf
      181 vghtgdcmsl avspdfnlfi sgacdasakl wdvregtcrq tftghesdin aicffpngea
      241 ictgsddasc rlfdlradqe licfshesii cgitsvafsl sgrllfagyd dfncnvwdsm
      301 kservgilsg hdnrvsclgv tadgmavatg swdsflkiwn
//
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LOCUS       AAA35922                 340 aa            linear   PRI 11-JUN-1993
DEFINITION  G protein beta subunit.
ACCESSION   AAA35922
VERSION     AAA35922.1  GI:306785
DBSOURCE    locus HUMGP accession M16538.1
KEYWORDS    .
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (residues 1 to 340)
  AUTHORS   Gao,B., Gilman,A.G. and Robishaw,J.D.
  TITLE     A second form of the beta subunit of signal-transducing G proteins
  JOURNAL   Proc. Natl. Acad. Sci. U.S.A. 84 (17), 6122-6125 (1987)
  MEDLINE   87317607
   PUBMED   3114742
COMMENT     On Jul 26, 1993 this sequence version replaced gi:183447.
            Draft entry and printed copy of sequence [1] kindly provided by
            B.Gao, 13-JUL-1987.
            Method: conceptual translation.
FEATURES             Location/Qualifiers
     source          1..340
                     /organism="Homo sapiens"
                     /db_xref="taxon:9606"
     Protein         1..340
                     /name="G protein beta subunit"
     CDS             1..340
                     /coded_by="M16538.1:148..1170"
ORIGIN
        1 mseleqlrqe aeqlrnqird arkacgdstl tqitagldpv griqmrtrrt lrghlakiya
       61 mhwgtdsrll vsasqdgkli iwdsyttnkv haiplrsswv mtcayaxsgn fvacggldni
      121 csiyslktre gnvrvsrelp ghtgylsccr flddnqiits sgdttcalwd ietgqqtvgf
      181 aghsgdvmsl slapngrtfv sgacdasikl wdvrdsmcrq tfighesdin avaffpngya
      241 fttgsddatc rlfdlradqe llmyshdnii cgitsvafsr sgrlllagyd dfncniwdam
      301 kgdragvlag hdnrvsclgv tddgmavatg swdsflkiwn
//
```

Align two sequences

Thu Aug 19 22:31:12 BST 2004

```
 /usr/tmp/seq1.133364.sca :  340 aa
>beta 3, 340 bases, 90F662BB checksum.                340 aa vs.
>beta 5, 395 bases, 8FDD2613 checksum.                395 aa
scoring matrix: , gap penalties: -12/-2
45.3% identity;          Global alignment score: 1137

                                                                    10
/usr/t MGE----------------------------------------------------MEQLRQE
       : .                                                   . .:..:
beta   MCDQTFLVNVFGSCDKCFKQRALRPVFKKSQQLSYCSTCAEIMATEGLHENETLASLKSE
              10        20        30        40        50        60

               20        30        40        50        60        70
/usr/t AEQLKKQIADARKACADVTLAELVSGLEVVGRVQMRTRRTLRGHLAKIYAMHWATDSKLL
       ::.:: .. . :    :: : ...  .:.:.:.  :.:::::::::  :.  : :  :.. .
beta   AESLKGKLEEERAKLHDVELHQVAERVEALGQFVMKTRRTLKGHGNKVLCMDWCKDKRRI
               70        80        90       100       110       120

               80        90       100       110       120
/usr/t VSASQDGKLIVWDSYTTNKVHAIPLRSSWVMTCAYAPSGNFVACGGLDNMCSIYNLK-SR
       ::.:::::.:::::::::: ::. .  .::::::::::  .:::::::: :::: :  ..
beta   VSSSQDGKVIVWDSFTTNKEHAVTMPCTWVMACAYAPSGCAIACGGLDNKCSVYPLTFDK
              130       140       150       160       170       180

     130       140       150       160       170       180
/usr/t EGNVKVSRE-LSAHTGYLSCCRFLD-DNNIVTSSGDTTCALWDIETGQQKTVFVGHTGD-
       . :. .... .. ::.::: : : . : .:.:.::: ::::::::.::    : :: .:
beta   NENMAAKKKSVAMHTNYLSACSFTNSDMQILTASGDGTCALWDVESGQLLQSFHGHGADV
              190       200       210       220       230       240

       190       200       210       220       230       240
/usr/t -CMSLAVSPDFNLFISGACDASAKLWDVREGTCRQTFTGHESDINAICFFPNGEAICTGS
        :.::: :   : :.:.:.:: .: .::.: : : :.:  :::::::.. ..:.:.:. .::
beta   LCLDLAPSETGNTFVSGGCDKKAMVWDMRSGQCVQAFETHESDINSVRYYPSGDAFASGS
              250       260       270       280       290       300

       250       260       270       280       290       300
/usr/t DDASCRLFDLRADQELICFSHESIICGITSVAFSLSGRLLFAGYDDFNCNVWDSMKSERV
       :::.:::.:::::.:.  .:.:::: : .:: ::::::::::::.:.. :::: .:. ::
beta   DDATCRLYDLRADREVAIYSKESIIFGASSVDFSLSGRLLFAGYNDYTINVWDVLKGSRV
              310       320       330       340       350       360

       310       320       330       340
/usr/t GILSGHDNRVSCLGVTADGMAVATGSWDSFLKIWN
       .:: ::.:::: : :. :: :  .::::  :..:
beta   SILFGHENRVSTLRVSPDGTAFCSGSWDHTLRVWA
              370       380       390

Elapsed time:  0:00:00
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